

Upper Pleistocene Fan 2 Play

UPL F2, #0182

Hyalinea “B”/*Trimosina* “B” through Sangamon fauna

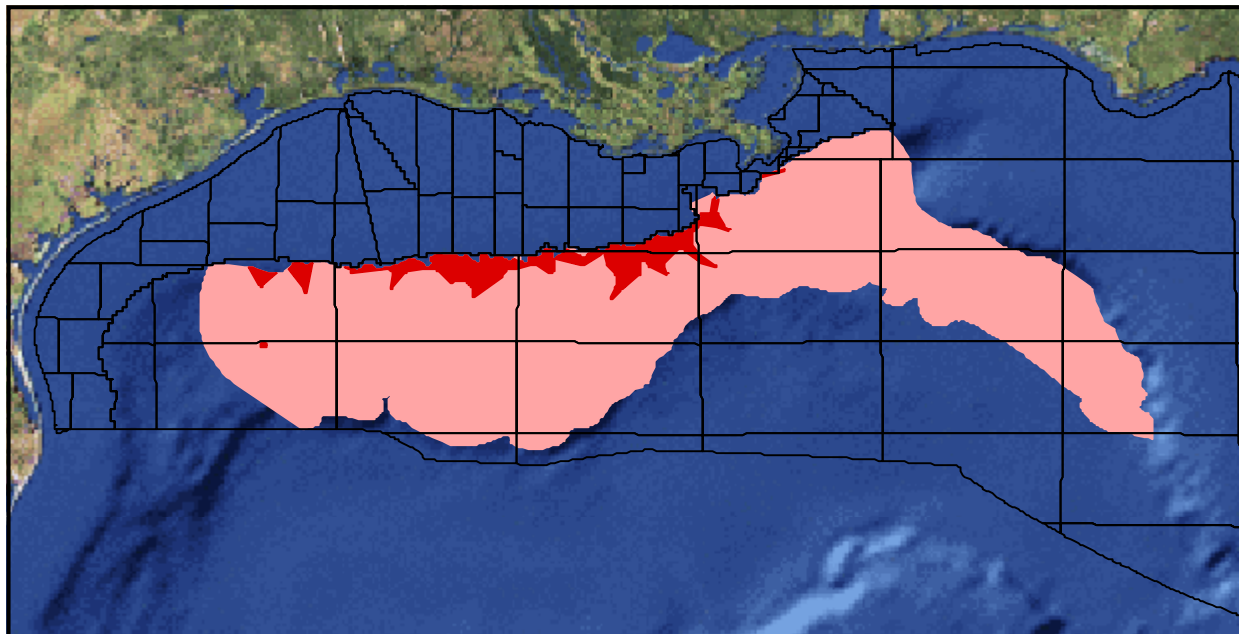


Figure 129. UPL F2 map showing location of play. Play limit shown in light red; hydrocarbon limit shown in dark red.

Overview

The Upper Pleistocene Fan 2 Play (UPL F2) contains reserves of 1,522.506 Bcfg and 117.936 MMbo (388.844 MMBOE) in 74 sands in 17 fields. The play extends continuously across the modern GOM slope from the East Breaks and Alaminos Canyon to Destin Dome and Desoto Canyon Areas, and to the south and east of the Desoto Canyon Area to the Henderson and Vernon Basin Areas (Figure 129).

Description

UPL F2 is defined by (1) a deep-sea fan depositional style representing sediments deposited basinward of the shelf edges associated with the UPL Chronozone, (2) a structural regime of allochthonous, small salt sheets or large salt canopies with intervening salt-withdrawal basins on the western and central GOM slope and high relief salt structures on the southeastern GOM slope, and (3) the UPL-1, UPL-2, UPL-3, and UPL-4 Chronozones,

the tops of which are defined by the *Hyalinea* “B”/*Trimosina* “B”, *Trimosina* “A” 2nd occurrence, and *Trimosina* “A” 1st occurrence biozones, and Sangamon fauna, respectively (Figure 8).

UPL F2 extends continuously downdip of the modern GOM shelf edge from the central East Breaks and Alaminos Canyon Areas to the southwestern Destin Dome and western Desoto Canyon Areas east of the modern Mississippi River Delta, and south and east of the Desoto Canyon Area to the Henderson and Vernon Basin Areas (Figure 129). Hydrocarbons have been found mostly in the northern portions of the East Breaks, Garden Banks, and Green Canyon Areas, and the Ewing Bank and northwestern Mississippi Canyon Areas. Located on the modern GOM slope, UPL F2 is not nearly as well explored as plays on the modern shelf. However, because it is one of the shallowest plays in the deepwater GOM, exploratory wells in deepwater usually penetrate UPL F2. The ancestral Mississippi River Delta System dominated deposition of the play's sediments.

Play Limits

UPL F2 is limited updip by the Upper Pleistocene Fan 1 Play (UPL F1) and by the deposits of the Upper Pleistocene Progradational Play (UPL P1). UPL F2 does not extend farther to the west because of an apparent lack of shelf source sands in offshore Texas during UPL time. To the east, the play onlaps the lower Cretaceous carbonate slope. Downdip in the western and central GOM, UPL F2 is limited by the farther downdip occurrence of either (1) the Sigsbee Salt Canopy Escarpment, where the farthest extent of large salt bodies overrides the abyssal plain or (2) the downdip limit of the Perdido Fold Belt and Mississippi Fan Fold Belt Plays. Downdip in the eastern GOM, UPL F2 is limited by the southern extent of Louann Salt deposition, as defined by the downdip extent of the Salt Roller/High-Relief Salt Structure Play (UK5-UJ4 S1) (Lore et al., 2001).

Depositional Style

UPL F2 is characterized by deep-sea fan systems deposited basinward of the UPL-1 shelf edge, the farthest updip shelf edge associated with the UPL Chronozone. Component facies include channel/levee complexes, sheet-sand lobes, interlobe/fringe sediments, and slump sediments that were deposited on the UPL-1 through UPL-4 upper and lower slopes, in topographically low areas between salt structure highs, and abyssal plains. These deep-sea fan systems are often overlain by thick shale intervals representative of zones of sand bypass on the shelf, or sand-poor zones on the slope.

The UPL deep-sea fan interval varies from less than 100 to more than 18,100 ft in thickness, with net sand thicknesses as much as approximately 2,600 ft. Sand-dominated successions comprising deposits of multiple sheet-sand lobes are more than 1,000 ft thick, with intervening shale sequences reaching as much as several thousands of feet in thickness. Thick, upward-coarsening and thinner, upward-fining log patterns of sand-dominated intervals represent sheet-sand lobe progradation and channel fill/abandonment, respectively, in proximal-fan areas. Irregularly stratified sand successions displaying spiky log patterns represent deposition in distal-fan areas.

Structural Style

Most of the fields in UPL F2 are structurally associated with salt bodies—shallow, intermediate, and deep depths—with hydrocarbons trapped on salt flanks or in sediments draped over salt tops. Other fields are structurally associated with anticlines.

Quantitative Attributes

On the basis of reserves calculations, UPL F2 is 70% gas and 30% oil. The 74 sands in the play comprise 153 reservoirs, of which 50 are nonassociated gas, 89 are undersaturated oil, and 14 are saturated oil. Proved reserves are estimated at 1,134.447 Bcfg and 97.820 MMbo (299.679 MMBOE) in 52 sands in 13 fields ([Table 57](#)). Unproved reserves are estimated at 388.059 Bcfg and 20.116 MMbo (89.166 MMBOE) in 22 sands in 4 fields. These proved plus unproved reserves account for 10% of the reserves for the UPL Chronozone.

	No. of Sands	Oil (MMbbl)	Gas (Bcf)	BOE (MMbbl)
Proved	52	97.820	1,134.447	299.679
Cum. production	45	51.080	724.082	179.920
Remaining proved	45	46.740	410.366	119.759
Unproved	22	20.116	388.059	89.166

Table 57. UPL F2 reserves and cumulative production.

Cumulative production from UPL F2 totals 724.082 Bcfg and 51.080 MMbo (179.920 MMBOE) from 45 sands in 11 fields. UPL F2 production accounts for only 6% of the UPL Chronozone's total production. Remaining proved reserves in the play are 410.366 Bcfg and 46.740 MMbo (119.759 MMBOE) in 45 sands in 12 fields.

[Table 58](#) summarizes that water depths of the fields in UPL F2 range from 663-3,153 ft, and play interval discovery depths vary from 2,000-13,370 ft, subsea. Additionally, porosity and water saturation range from 23-36% and 16-54%, respectively.

74 Sands	Min	Mean	Max
Water depth (ft)	663	1,766	3,153
Subsea depth (ft)	2,000	8,011	13,370
Reservoirs per sand	1	2	9
Porosity	23%	32%	36%
Water saturation	16%	25%	54%

Table 58. UPL F2 sand attributes. Values are volume-weighted averages of individual reservoir attributes.

Exploration History

UPL F2 has a 23-year history of discoveries, which is relatively short when compared with plays located on the modern shelf (Figure 130). The first and largest sand in the play was discovered in 1976 in the Garden Banks 236 Field (Pimento) and contains an estimated 68.978 MMBOE (Figure 131).

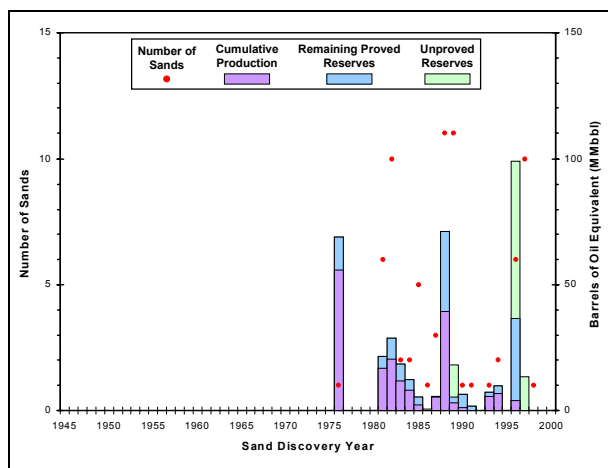


Figure 130. UPL F2 exploration history graph showing reserves and number of sands discovered by year.

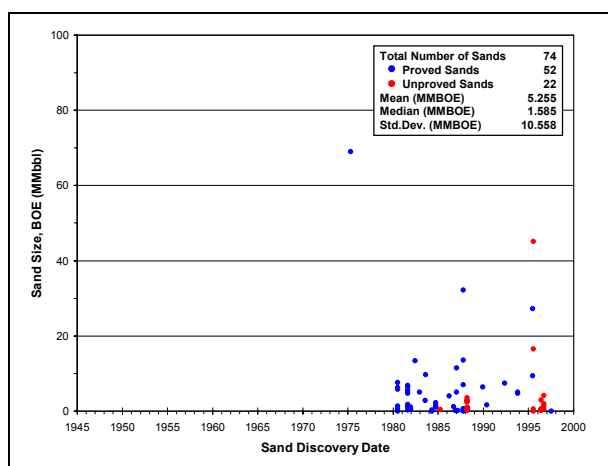


Figure 131. UPL F2 sand discovery graph showing the size of sands discovered by year.

The maximum number of sands discovered in any year occurred in 1988 and 1989, both with 11 sands from four fields (Figure 130). However, the maximum yearly reserves of 99.195 MMBOE were added in 1996 with the discovery of 6 sands from two fields, Garden Banks 516 (Sorano) and Ewing Bank 963 (Arnold). The number of discoveries per year throughout the play's history has fluctuated, with several local peaks, including one in the late-1990's. In fact, since the first Atlas database cutoff of January 1, 1995, 17 sands have been discovered, the largest of which is estimated to contain 45.203 MMBOE in the Sorano Field. The mean sand size for the play is 5.255 MMBOE.

Production History

UPL F2 has a 13-year history of production (Figure 132). Oil production began in 1988 and has generally increased each year to its highest level ever in 1998. Gas production began in 1980 and was very erratic initially, ceasing in 1981 and 1983 through 1987. Gas production has generally increased each year since then to its highest level in 1996. Subsequently, gas production has declined.

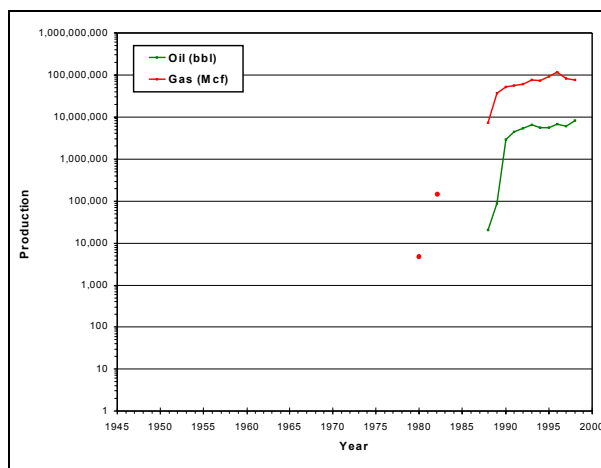


Figure 132. UPL F2 production graph showing oil and gas production by year.